

CLAIM AMENDMENTS

1-36. (canceled)

37. (previously presented): A method to screen for a modulator of the expression of a gene in a multi-cellular organism, which method comprises:

a) administering a test substance to a non-human multi-cellular organism which expresses a fluorophore under the direction of a promoter of an endogenous gene, and determining the expression of said promoter via observing the presence, absence or intensity of the fluorescence generated by said fluorophore at various locations in said multi-cellular organism by whole-body external fluorescent optical imaging;

b) determining the expression of said endogenous promoter, via observing the presence, absence or intensity of the fluorescence generated by said fluorophore at various locations by whole-body external fluorescent optical imaging, in a control multi-cellular organism which expresses said fluorophore under the direction of said promoter of said gene; and

c) comparing the expression of said promoter determined in steps a) and b), wherein the expression determined in step a) is different from that in step b) when said test substance modulates said gene expression;

wherein said fluorophore is a protein that is autofluorescent such that no substrates or cofactors are needed for it to fluoresce.

38. (canceled)

39. (previously presented): A method to screen for a multi-cellular organism that expresses a gene at an altered level, which method comprises:

a) administering a mutation-inducing agent or treatment to a non-human multi-cellular organism which expresses a fluorophore under the direction of a promoter of an endogenous gene, and determining the expression of said promoter via observing the presence, absence or intensity of the fluorescence generated by said fluorophore at various locations in said multi-cellular organism by whole-body external fluorescent optical imaging;

b) determining the expression of said endogenous promoter, via observing the presence, absence or intensity of the fluorescence generated by said fluorophore at various locations by whole-body external fluorescent optical imaging, in an untreated control multi-cellular organism which expresses said fluorophore under the direction of said promoter of said gene; and

c) comparing the expression of said promoter determined in steps a) and b), wherein the expression determined in step a) is different from that in step b) when said multi-cellular organism expresses said gene at said altered level;

wherein said fluorophore is a protein that is autofluorescent such that no substrates or cofactors are needed for it to fluoresce.

40. (original): The method of claim 39, wherein the mutation-inducing agent or treatment causes a mutation in germ-line cells of the multi-cellular organism so that the mutation is stably-transferable to offspring of the multi-cellular organism.